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## ON THE PRINCIPLES OF SINGHALESE CHRONOLOGY.

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TIME is that abstract duration which pervades all ages, without either a commencement or conclusion. It partakes of many of the most sublime attributes of the Supreme Being, such as eternity, invisibility, omnipresence, immaterialism, and so forth. There is some method of computing it amongst every nation. This computation and adjustment of time form the principles of Chronology.

The most natural division of time seems to be into that of days. Day is called in Singhalese *dawasa*. The interval between two successive risings of the sun is a *dawasa*. Seven *dawasas* are reckoned into one *satiya* "week." The days of the week, as among many other nations even in the West, are appropriated to seven gods, and are called by their names: thus *Iridā* "Sun's-day," *Sandudā* "Moon's-day," *Angaharu-wādā* "Mar's-day," *Badādā* "Mercury's-day," *Brahaspatindā* "Jupiter's-day," *Sikurādā* "Venus'-day," and *Senasurādā* "Saturn's-day,"

*Dawasa* is divided into *dawāla* "day time," and *rātriya* "night time." *Dawāla* is from the rising to the setting of the sun; and *rātriya*, begins with the setting of the sun and continues till his rising. From the rising of the sun to his arrival at the meridian is called *pera-warūwa* "forenoon;" and the interval between the meridian and the setting of the Sun is termed *pas-warūwa* "afternoon." "Noon" or "midday" is called *maddāhana*.

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SINGHALESE CHRONOLOGY.

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NAMES.	P.	W.	H.	'	"
Tulā... ..	4	57	Libra ... ..	1	58 48
Wṛiṣchika ... ..	5	15	Scorpio ... ..	2	6 0
Dhanu ... ..	5	29	Sagittarius ... ..	2	11 36
Makara ... ..	5	17	Capricornus ... ..	2	6 48
Kumbha ... ..	4	43	Aquarius ... ..	1	53 12
Mina ... ..	4	19	Pisces ... ..	1	43 36

From this table it appears that all the *rāsi* are not of equal size, consequently some take a longer time than others in passing through the horizon.

Of the twelve *rāsi*, that called *Sinpha*, "Leo" is appropriated to the Sun, and the one next before it, called *Karkāṭaka* "Cancer," is given to the Moon; the rest of the *rāsi* are appropriated to the five ancient planets in the order of their position with regard to the Sun. Thus, *Mithuna* and *Kanyā*, the *rāsi* or "signs" bordering on each side of the mansions of the Sun and Moon, belong to Mercury. The two beyond these on each side, namely *Wṛiṣhabha* and *Tulā*, are appropriated to Venus; the two beyond these namely *Mēsha* and *Wṛiṣchika*, belong to Mars. The next two, *Mina* and *Dhanu*, are the mansions of Jupiter, and the remaining two, *Makara* and *Kumbha*, belong to Saturn.

The Sun, the Moon, and the Planets, move through these *rāsi* in their courses.

*Awurudda* "year," is the time during which the sun travels through all the twelve *rāsi* in his course, beginning from the first point of *Mēsha rāsiya*. Sixty years make a cycle. The number of the cycle of any given year is found by adding 11 to the given year of *Saka* (which is 78 years less than the Christian era) and dividing the sum by 60. The remainder, after this process, is the number of the cycle of the given year; and if nothing remains, 60 is the cycle.

The Singhalese have four eras by which they date the year of any event. That which is most familiar to the generality of the people is the *Ṣaka Warsha*, which is the year of some

King of the continent of Asia, whose name was Śaka, and who was said to be the head of the royal race of Yawana (Grecian). The present year (A.D. 1855) is the 1777th of the Śaka Warsha, 78 years later than the Christian era.

They use the year of our Lord Jesus Christ in all the public documents at present; and the inhabitants of the towns and their neighbourhood are more familiar with this than Śaka Warsha.

For religious purposes they use *Buddha Warsha*, the year from the death of Gautama Buddha, 621 years before Śaka Warsha. Consequently, the present is the 2398th year of *Buddha Warsha*.

In most of the Medical, Astronomical, and other Scientific works of very ancient dates, which we have in Sanskrit from the Védas of the Brahmīns, another era, called *Kaliyuga Warsha*, is used. *Kaliyuga* is the last of the four *yugas* or ages of the world, which, the Siṅhalese say, have passed. The commencement of the *Kaliyuga* was 3179 years prior to Śaka Warsha. The present year of the *Kaliyuga* is the 4956th. The whole period during which it is to exist is 432,000 years. The *yuga* or age that preceded *Kaliyuga* was called *Dwāpara*, and existed twice as many years as the *Kaliyuga*, namely 864,000. The one before that was *Trétā*, which existed 1,296,000 years being three times as many as the years of *Kaliyuga*. And the one preceding this was *Kṛita*, the duration of which was four times that of *Kaliyuga*, namely 1,728,000 years. Before these four *yugas*, the present *kalpa* or the period of the world, is believed to have existed during 27 divine *yugas* of an innumerable number of years.

The length of a year is 365 *dawas*, 15 *peyas*, 31 *winādi*, and 15 *tatparas*. The commencement of the Siṅhalese year falls generally about the 11th of April. To find the exact moment at which any given year commences, or the moment at which the sun enters into *Mēsha rāsiya*, the following is the rule. Subtract 1244 from the Śaka era, and by the remainder multiply 365 d. 15 p. 31 w. 15 tat.; and to the product add 1615536 *dawas*

59 p. 45 w. 30 tat.; and then throw off as many 7 days as possible from the sum. The commencement of the year or the sun's entering into *Mēsha rāsiya* is so many days after Friday, as appears in the remainder of *dawas*, *peyas*, *winādi*, and *tatparas*. If there is no remainder in the place of days, the commencement of the year is on Friday; if one, on Saturday, and so forth. Thus, to find the commencement of the present Siṅhalese year, the year of Śaka 1777 (A.D. 1855), subtract 1244 from 1777 which leaves a remainder 533, by this multiply 365 d. 15 p. 31 w. 15 tat., which gives a product of 19682 *dawas* 52 p. 36 w. 15 tat.; then add to this product 1615536 *dawas*, 59 p. 45 w. 30 tat., which will give a sum of 1810219 *dawas*, 52 p. 21 w. 45 tat.; after this, throw off as many seven days as possible, when there will be a remainder of 5 d. 52 p. 21 w. 45 tat. The commencement of the year is thus 5 days after Friday, namely, on Wednesday, at 52 *peyas* and 21 w. 45 tat.: which, according to English calculation, is Thursday 2 h. 56' 42" A.M., or 3 minutes and 18 seconds before 3 A.M.

*Māsē* "month," is about the twelfth part of a year, and is of two kinds, the solar and lunar. The solar month is the time during which the sun continues in any one of the twelve *rāsi*.

The moment at which the sun enters into any one of the twelve *rāsi* is found by the following rule:—to the *dawas* *peyas* and *winādi* of the sun's entering into *Mēsha rāsiya*, add the number of *dawas*, *peyas* and *winādi* opposite to the required *rāsi* in the table below, and leave off, if possible, seven from the number of days, and the remainder is the *dawasa*, *peya* and *winādiya* after Friday, when the Sun enters that *rāsiya*.

			D.	P.	W.
Viṣṣabha	...	...	2	55	32
Mithuna	...	...	6	19	44
Karkāṭaka	...	...	2	56	22
Siṅha	...	...	6	24	34
Kanyā	...	...	2	26	44
Tulā	...	...	4	54	6

			D.	P.	W.
Wṛiṣchika	...	...	6	48	13
Dhanu	...	...	1	18	37
Makara	...	...	2	39	30
Kumbha	...	...	4	6	37
Mina	...	...	5	55	10
Mésa	...	...	1	15	31

Thus, to find the time at which the sun enters *Mithuna* *rāsiya* in the present year, add

D.	P.	W.	
2	52	22*	Sun's entering into <i>Mésa</i> <i>rāsiya</i>
6	19	44	as found opposite <i>Mithuna</i> <i>rāsiya</i>
9	12	6	
7	0	0	

2 12 6 That is, on Sunday at 12 p. 6 w.

According to English calculation, 10 h. 50' 24" A.M.

The length of each of the twelve solar months, or the time during which the sun continues in any one of the *rāsi*, is given in the following table.

			D.	P.	W.
Mésa	...	...	30	55	32
Wṛiṣhabha	...	...	31	24	12
Mithuna	...	...	31	36	38
Karkāṭaka	...	...	31	28	12
Siṅha	...	...	31	2	10
Kanyā	...	...	30	27	22
Tulā	...	...	29	54	7
Wṛiṣchika	...	...	29	30	24
Dhanu	...	...	29	29	53
Makara	...	...	29	18	7
Kumbha	...	...	29	48	33
Mina	...	...	30	20	21

Total... 365 15 31

\* In leaving out the *tatparas*, if there are 30 or more, one is added to the *winādies*.

From this table it appears, that the sun does not pass through every *rāsiya* in an equal length of time; he sojourns the longest time in *Mithuna*, being 31 d. 36 p. 38 w. From thence he continues less and less in every successive *rāsiya*, until he comes to *Makara*, where he passes only 29 d. 18 p. 7 w. From *Makara*, again, the time of the sun's sojourn in each *rāsiya* successively becomes longer and longer, till he comes up to *Mithuna* again. The difference of the sun's longest and shortest sojourn in these two *rāsi* is 2 d. 18 p. 31 w.

The longest day here is said to be 31 p. 22 w., and the shortest 28 p. 38 w., or according to English reckoning, the longest day is 12 hours and 31 minutes, and the shortest day is 11 hours and 29 minutes. In order to find the gradual change of the different length of day and night, the following table is given:—

			P.	W.
Mésa	...	...	30	0
Wṛiṣhabha	...	...	30	38
Mithuna	...	...	31	10
Karkāṭaka	...	...	31	22
Siṅha	...	...	31	10
Kanyā	...	...	30	38
Tulā	...	...	30	0
Wṛiṣchika	...	...	29	22
Dhanu	...	...	28	50
Makara	...	...	28	38
Kumbha	...	...	28	50
Mina	...	...	29	22

In this table, the length of the day at the time of the sun's entering into each of the 12 *rāsi* is given; the difference between this and 60 *peyas* being the length of the night. The length of the day or night in any day intervening between any two days given in the table is more or less in proportion. This table is, however, constructed upon the principle that the sun always sets first at the point in the *rāsi-chakra* "zodiac" opposite to his position when he rises in the eastern horizon.



But as the sun progresses about one-sixtieth part of a *rāsiya* from the time of his rising to that of his setting, and as the seventh *rāsiya*, by which he always sets, is never equal in size to that by which he rises, there is always a difference of about 5 *winādi*: consequently, the length of day or night given in the table occurs always about 20 days previous to that given in it.

The six months from the Sun's entering into *Karkāṭaka* is termed *Dakṣiṇī-ayana* "Southern course," and the other six months from his entering into *Makara*, is called *Uttarā-ayana* "Northern course," because during these months the sun seems to travel towards these directions.

This declination of the sun is said to cause the general length of a man's shadow (in the central parts of this Island,) cast on the ground at noon for each one-third of the solar month, to be the following number of feet;—viz.:

MONTH.	NO. OF FT.	MONTH.	NO. OF FT.
Mēsha ...	1½ 1 1½	Tulā ...	2½ 3 3½
Wṛishabha ...	1½ 2 2½	Wṛiṣchika ...	3½ 4 4½
Mithuna ...	2½ 3 2½	Dhanu ...	4½ 4½ 4½
Karkāṭaka ...	2½ 2 1½	Makara ...	4½ 4 3½
Siṅha ...	1½ 1 1½	Kumbha ...	3½ 3 2½
Kanyā ...	1½ 2 2½	Mīna ...	2½ 2 1½

This portion of the shadow of a man is called *awachchāwa*, or more properly, *awachchhāyāwa*, "extra shadow." Thus, the *awachchāwa* for the first 10 days of the sun's stay in *Mēsha*, or the 10 days after the 11th of April, is one foot and a half; for the next 10 days of the same month, it is one foot, and for the third 10 days it is one and a half. And for the first 10 days of the solar month of *Wṛishabha*, the "extra shadow" of a man is one foot and a half; for the next 10 days it is two feet, and for the last 10 days it is two and a half feet; and so on.

In consequence of there existing little or no difference in the aspect of the country at various seasons, the Sinhalese do not recognise the four seasons of the year, as people of other countries do. The medical and astrological books, speak,

indeed, of six seasons of the year, called *ritu*, and the religious books make mention of three *ritus*: but they are of no consequence here, as people do not talk of them on ordinary occasions.

The lunar month is the period from the moon's passing between the sun and earth until she comes again between these two bodies. The names of the twelve lunar months beginning from that in which the sun comes to *Mēsha*, are as follows:

Solar Month.	Lunar Month.	Corresponding English Month.
Mēsha	Bak	April and May
Wṛishabha	Wesak	May and June
Mithuna	Poson	June and July
Kāṭaka or Karkāṭaka	Ēsaḷa	July and August
Siṅha	Nikīṇi	August and Sept.
Kanyā	Binara	Sept. and Oct.
Tulā	Wap	Oct. and Nov.
Wṛiṣchika	Il	Nov. and Decr.
Dhanu	Uṇduwap	Dec. and Jan.
Makara	Durutu	Jan. and Feb.
Kumbha	Nawam	Feb. and March
Mīna	Mēdin	March and April

The lunar month does not necessarily begin on the same day as the solar. It begins with the day after the new moon. That lunar month in which the sun enters *Mēsha rāsiya*, or that of which the full moon is nearest to the sun's entering *Mēsha rāsiya*, is the first lunar month, *Bak masa*.

When there are thirteen full moons in any year, the additional month is called *Adhika māsé*, two of the months being called by the same name.

About *Adhika māsé* there is at present a controversy, in which every one of the Buddhist priests of the Island is more or less engaged. It was originated about 35 years ago, by Atthadassi Terunnānse of Bentōṭa, who is considered to be the most learned of the Buddhist priests of the day. One party

maintain that the *Adhika māsé*, or the additional month, ought to be in that solar month in which the two full moons occur; but the other party say, that the additional month must be next to *Ēsaḷa*, and ought to be called the second *Ēsaḷa*, without any regard to the solar month in which the two full moons occur.

The lunar month is divided into two portions, each called *pakshaya*. One, from the day after the new moon to the day of full moon, is called *pura*, "increase;" or *pūṛwa pakshaya*, "the former part;" or *śukla-pakshaya*, "white part:" and the other, from the day after the full moon to the day of new moon, is called *awa*, "wane," or *apara-pakshaya*, "the latter part," or *krishna-pakshaya*, "the black part." Each *pakshaya*, is divided into 15 *tithi*. The length of a *tithi* varies from 53 to 67 *peyas*.

The names of the fifteen *tithi* from the first, are Pēlawiya, Diyawaka, Tiyaṭwaka, Jalawaka, Wiśēniya, Sēṭawaka, Satawaka, Aṭawaka, Nawawaka, Ḍasawaka, Ekoḷoswaka, Doḷoswaka, Teleswaka, Tuduswaka and Paṣaḷoswaka or Amāwaka. Of these two names for the last *tithi*, Paṣaḷoswaka is the full moon, and Amāwaka, the new moon.

The moon's path in the firmament is divided into 27 portions, each called a *nekata*, "asterism." Each *nekata* is four-ninths of a *rāṣiya*. The names of the 27 *nekat*, beginning from the first point of *Mēsha rāṣiya*, are Aṣwida, Berāṇa, Keṭi, Rehēṇa, Muwaṣṛisa, Ada, Puṇāwasa, Puṣha, Asāḷisa, Mā, Puwapaḷ, Uttarapaḷ, Hata, Sita, Sā, Wiśā, Anura, Deṭa, Mula, Puwasala, Uttarasala, Suwana, Denāṭa, Siyāwasa, Puwapuṭupa, Uttarapuṭupā and Réwatiya. The *tithi* and *nekata* of any day or time are those in which the moon is in her course through the zodiac in that day or time. The time of the moon's passing through each *nekata* varies from 53 to 67 *peyas*.

The popular notion of the moon's rising or setting *peya* respectively at day and night of *pura* and *awa*, and *vice versa*, is twice the number of *tithi*. So that on the day of Pēlawiya

in *pura*, or the first day of the moon, she rises in the second *peya* after it is day, and sets in the second *peya* after it is night, in proportion to what is past out of the *tithi*. On Diyawaka of the *pura*, or on the second day of the moon, she rises in the 4th *p.* after it is day, and sets in the 4th *p.* after it is night. On Jalawaka of *awa*, or the 4th day of the wane, the moon rises at the 8th *p.* after it is night, and sets in the 8th *p.* after it is day, and so forth. It should be noticed, that in general one *tithi* and *nekata* exhibit in one part of the day, and another *tithi* and *nekata* in the next part of the day; and so proportionably the rising and setting of the moon are changed. Although the above is the popular notion of the moon's rising and setting time, its exact moment is known accurately by the position of the moon in the *rāṣiya* through which she passes, by a reference to the *nekata* of the day in a common *lita*, or almanac.

Each of the four quarter days of the moon is called *pōya*; the full moon is called *Paṣaḷoswaka pōya*, and the new moon *Māsé pōya*. The first quarter is called *Māsé giya aṭawaka pōya*, and the last quarter *Pahaḷoswaka giya aṭawaka pōya*. In the *pōya*, or quarter days, the Buddhists generally refrain from worldly occupations, and engage themselves in religious works, believing, on the authority of Buddha, that on these days the messengers of the god Śakra or Indra come to the human world, observe the deeds of the people, record each man's actions distinctly in a book, and then carry it to report to their master.

The Singhalese use different modes of computing time or finding the *peya* of the day. The most common way, when the sun or moon is visible, is by the shadow of a person cast on a level ground measured with his own foot. The method of doing it is thus. Leave off the *awachchāwa* "the extra shadow" as above mentioned, according to the time of the solar month, then double the remaining number of feet and add 12 more, and make this sum a divisor, and 180 its dividend. The quotient is the number of *peyas* either from the

sun-rise, or to the sun-set, as the case may be. If there be any remainder after the above division, multiply it by 60, and divide the product by the same divisor for *wināḍi*, and so for *tatparas*. Thus on the fifteenth day of April, in the morning, if I see my shadow to be 20 of my feet, I proceed thus to find the *peya*. It being only about two days after the Sun's entering into *Mésa rāṣiya*, the *awachchāwa* is  $1\frac{1}{2}$  ft., which I take off, and the remainder,  $18\frac{1}{2}$  ft., I multiply by two, which gives 37, I add to this 12, and the sum left is 49. I then divide 180 by 49, thus:

49) 180 (3 *p.*

147

33

60

49) 1980 (40 *w.*

196

20

60

49) 1200 (24 *tat.*

98

220

196

24

and find that the time is 3 *p.* 40 *w.* 24 *tat.*, in the morning, or, according to the English way, 28' 10" after 7 A.M.

A more simple way than this, though not so correct, is that after taking away the *awachchāwa* "the extra shadow," the following numbers of feet stand for each *peya*, either from the sun-rise, or to sun-set, as the case may be, namely 84, 49, 24, 16, 12, 9, 7, 5, 4, 3, 2,  $1\frac{1}{2}$ , 1,  $\frac{1}{2}$ , 0. Thus in the former case  $8\frac{1}{2}$  ft. after the *awachchāwa* has been taken away, being between 24 and 16, is between 3 and 4 *peyas* from sun-rise.

To reckon the time when the sun or moon is not visible, they have a cup called *pe-tētiya*, made of some kind of metal, or coconut shell, with a small hole in the centre, which will fill in just in one *peya* when placed in a vessel of still water.

The Singhalese speak of the time of the day in a different mode from what the English do. They do not say, "It is three o'clock," or three on the clock. This mode of expression must be of a comparatively recent date, as clocks and watches were not in use at a very remote period. There is an unidiomatic and corrupt way of speaking of time; among the Singhalese, in the neighbourhood of towns, inhabited by Europeans and their descendants; such as, "*Dēn kiyada? Pahayi*," "How many is it now? Five" Meaning, "What is the hour now? Five" This mode of conversation concerning time is unintelligible among the Singhalese people of the villages, who have less intercourse with Europeans and speak the language in its purity. Their question, in the place of "What o'clock is it now?" is thus;—"Dēn *eliwēṇḍa* (or *eliwelā*) or *rēwēṇḍa* (or *rēwelā*) *kī peyada?*" "How many *peyas* is it now to be morning? (or since morning,) or to be night, (or since night)?" Sometimes, speaking with respect to the feet of the shadow of the Sun or Moon, they say: "*Dēn ira* (or *handa*) *mudunāṭa eṇḍa* (or *herilā*) *doḷos piyawarayi*."—"It is twelve feet the sun (or moon) to come to the top (or having turned.)"